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UNITED STATES NAVY

# MEDICAL NEWS LETTER

Vol. 40 Friday, 17 August 1962 No. 4

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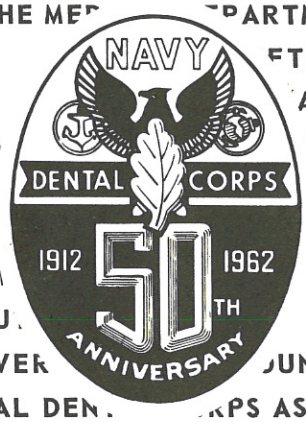


E. C. KENNEY
Rear Admiral MC USN
Chief of the Bureau of
Medicine and Surgery

C. W. SCHANTZ
Rear Admiral DC USN
Assistant Chief of the Bureau of Medicine and
Surgery (Dentistry) and Chief, Dental Division

# ANNIVERSARY MESSAGES—U.S. NAVAL DENTAL CORPS

## FROM THE PRESIDENT OF THE UNITED STATES

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REAR ADMIRAL C W SCHANTZ DC USN, REPORT DELIVERY

ASSISTANT CHIEF OF THE BUREAU OF MEDICINE AND SURGERY (DENTISTRY) AND CHIEF, DENTAL DIVISION DEPT OF THE NAVY WASHDC

I AM HAPPY TO EXTEND MY GREETINGS AND CONGRATULATIONS TO ADMIRAL SCHANTZ AND THE OFFICERS AND MEN OF THE DENTAL DIVISION OF THE BUREAU OF MEDICINE AND SURGERY ON THE FIFTIETH ANNIVERSARY OF THE U.S. NAVAL DENTAL CORPS.

THE CORPS PERFORMS AN IMPORTANT FUNCTION IN MAINTAINING THE HEALTH OF THE U.S. NAVY AND MARINE CORPS, AND I AM GLAD TO HAVE THIS OPPORTUNITY TO SEND THE U.S. NAVAL DENTAL CORPS MY WARM CONGRATULATIONS AND BEST WISHES FOR THE TASKS WHICH STILL LIE AHEAD OF YOU

JOHN F KENNEDY.

BT

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THE SECRETARY OF DEFENSE
WASHINGTON

## TO THE U. S. NAVAL DENTAL CORPS, 1962

Hearty congratulations on your fiftieth anniversary. Your half-century of service has been a record of professional competence, praiseworthy accomplishments, and devotion to duty. Your Corps has made remarkable progress in the field of dentistry.

We are proud to have your Corps as an important member of the team that helps to maintain the over-all health of Armed Forces of the United States. My best wishes for your continued success.

Robert S. McNamara

THE SECRETARY OF THE NAVY
WASHINGTON

It is a sincere pleasure for me to extend warmest greetings to the U. S. Naval Dental Corps on the occasion of its Fiftieth Anniversary.

Your mission is vital to the maintenance of the over-all health of the Navy and Marine Corps. The complexities of the modern defense machine demand a physical fitness unknown during the founding period of your fine Corps. Yours is a direct contribution to this effort.

In addition, you exert a lasting influence upon the health of millions of our young men and women who serve their country in the U. S. Navy and Marine Corps. This influence carries over into the civil populace as these individuals return to their homes and families, thus adding to the over-all health potential of our Nation.

May the U. S. Naval Dental Corps, through pursuit of its vigorous programs of education and research, continue in its prominent position of leadership in the dental profession throughout the civilized world.

Fred Korth

CHIEF OF NAVAL OPERATIONS

It is a sincere pleasure to extend warm and hearty congratulations to the U.S. Naval Dental Corps on the occasion of the 50th anniversary of its founding. Your contributions to the overall health of officers and men of the Navy and Marine Corps are without question a vital factor in the successful completion of our many and varied duties.

The many requirements placed upon those who man our ships, aircraft, shore stations, and Marine units make it necessary that all personnel concerned attain the highest possible degree of physical fitness. Your outstanding efficiency, technical achievements, and superb leadership today are a major part of our program of keeping people fit and will be of even greater value in the days to come.

George Anderson

GEORGE W. ANDERSON
Admiral, U.S. Navy

HEADQUARTERS U. S. MARINE CORPS
OFFICE OF THE COMMANDANT
WASHINGTON, D. C.

Dear Admiral Schantz:

It is a genuine pleasure to extend heartiest congratulations and best wishes from the United States Marine Corps to you, and to all the members of the Navy Dental Corps, on the 50th anniversary of your splendid organization.

Since its founding on 22 August 1912, the Navy Dental Corps has established a fine record of devotion to duty and high professional competence. We Marines hold all of you in high esteem.

Warmest personal regards and every good wish for the continued success of the Navy Dental Corps.

Sincerely,

David M. Shoup

DAVID M. SHOUP
General, U. S. Marine Corps
Commandant of the Marine Corps

Rear Admiral Curtis W. Schantz, DC, USN
Assistant Chief, Bureau of Medicine and Surgery
Chief, Dental Division
Department of the Navy
Washington 25, D. C.

THE SURGEON GENERAL OF THE NAVY

It is my pleasure to extend sincere congratulations to the Navy Dental Corps on the occasion of its Fiftieth Anniversary.

Throughout these years dental care for Navy and Marine Corps personnel has kept pace with the tremendous advances in dental techniques and materials. Significant contributions by Navy Dental Officers have been made in the broad areas of dental caries, oral pathology and high speed techniques. Both residency training and post-graduate level education have been vigorously conducted to improve and increase clinical capability. Dental Officers have increased their proficiency in General Anesthesia prior to assignment to sea duty and thereby give invaluable support to the Medical Officer during surgical procedures.

As spokesman for the other Corps of the Medical Department I am privileged to publicly acclaim your importance as a component of the Medical Team. Working together we can truly accomplish our mission of protecting the health and physical fitness of the Serviceman.

E. C. KENNEY
Rear Admiral MC U.S.N.

**DEPARTMENT OF THE NAVY**
**BUREAU OF MEDICINE AND SURGERY**
**WASHINGTON 25, D.C.**

To Members of the United States Naval Dental Corps
and Reserve Components

On the occasion of the 50th Anniversary of the founding of the United States Naval Dental Corps, I offer a warm and cordial greeting to all those whose unceasing efforts have been directed toward the building of the professional reputation enjoyed by us today.

It is a time for us to reflect upon our past achievements; it is also a time for us to plan for even greater accomplishments ahead. Progress is never static. Many of those who have gone before us set their sights on goals that were often beyond the horizon; they, however, possessed the fortitude to chart a forthright course, often through stormy seas, to secure the fulfillment of their vision. It is this spirit that has been the driving force behind the leadership of the United States Naval Dental Corps.

Our heritage, therefore, demands that we, the members of the Dental Corps of 1962, accomplish our everyday tasks and surmount our everyday problems in a manner that will be a source of pride to those who will celebrate our Centennial, 50 years hence. This will often demand personal sacrifices, not without some misgivings, but our deeds pervade our future. I, therefore, proudly extend to all members of the United States Naval Dental Corps, past and present, regular and reserve and to all those who work with us, a "well done" and sincere Anniversary wishes.

C. W. SCHANTZ
Rear Admiral, DC, USN
Assistant Chief of the Bureau of
Medicine and Surgery (Dentistry
and Chief, Dental Division

AMERICAN DENTAL ASSOCIATION

222 East Superior Street / Chicago 11, Illinois / WHitehall 4-6730

Rear Adm. Curtiss W. Schantz
Assistant Chief for Dentistry,
and Chief, Dental Division
Department of the Navy
Bureau of Medicine and Surgery
Washington, D. C.

Dear Admiral Schantz:

It is my pleasure to extend to all officers of the Navy Dental Corps, active, reserve and retired, the heartfelt congratulations of the members of the American Dental Association on the occasion of the Corps' Golden Anniversary.

The officers of the Navy Dental Corps, through their extraordinary devotion to the improvement of the dental health of Navy personnel and their intimate concern for the stability of the Corps as an essential and autonomous arm of the Navy health team, have earned the unstinting admiration of the entire dental profession.

On behalf of the more than 98,000 members of the American Dental Association, I am privileged to extend all good wishes for continued success and good sailing to all members of the Navy Dental Corps.

Cordially,

John R. Abel

John R. Abel, D.D.S.
President


Chiefs of the Dental Division, 1918–62.

## The United States Naval Dental Corps

Rear Admiral C. W. Schantz DC USN, Assistant Chief, Bureau of Medicine and Surgery (Dentistry), and Chief, Dental Division.

Fifty years have passed since President Taft, on 22 August 1912, signed a bill passed by Congress authorizing the appointment of ". . . not more than 30 acting assistant dental surgeons to be a part of the Medical Department of the United States Navy. . . ." Although the event marked the establishment of the U. S. Naval Dental Corps, its roots may be traced backward for well over 100 years. For it was in 1844 that Dr. Edward Maynard, a dentist in Washington, D. C., first advocated a dental corps for the U. S. Army and for the U. S. Navy. Numerous letters substantiate his efforts. During the years that intervened, many additional attempts were made to provide regular dental care in the U. S. Navy.

There were, however, dentists and dental apprentices in the U. S. Navy before the establishment of a Dental Corps. Thomas O. Walton, D. D. S., graduate of the Baltimore College of Dental Surgery in 1856, was the first graduate dentist to serve as an officer in the Navy. Appointed as an Acting Assistant Surgeon, he served in the Medical Department of the U. S. Naval Academy from 22 April 1873 to 30 June 1879. The following year he was appointed as a civilian contract dentist and in that capacity provided dental care for the midshipmen until 1899. In November of 1899, Dr. Richard Grady succeeded Dr. Walton at the Naval Academy as a contract dentist. Dr. Grady was later commissioned in the U. S. Naval Dental Corps following its establishment.

Elsewhere, when available, dental care was accomplished by limited numbers of hospital stewards, with varying amounts of training in dentistry, who were enlisted in the Navy. In 1903, Navy Surgeon General P. M. Rixey stated that ". . . this arrangement . . . is not satisfactory to the Bureau and is neither just to the men nor pleasing to the dental profession . . . ." In 1904, Edward E. Harris D. D. S., became the first graduate dentist to enlist in the Navy as a hospital steward performing dental treatment exclusively. Remaining in the Service, he was commissioned in the Dental Corps after its establishment. Others followed Dr. Harris in a similar capacity.

Granted the authority by Congress to establish a Dental Corps, the Secretary of the Navy appointed Emory A. Bryant, D. D. S., and William N. Cogan, D. D. S., to form the Corps. Dr. Bryant was a practicing dentist in Washington, D. C.; Dr. Cogan resigned as Dean of Georgetown University Dental School to accept his appointment. The first examining board for the selection of dental officers to serve in the U. S. Navy met in November-December 1912 in Washington, D. C. It was comprised of the following members:

Lieutenant Commander Richmond C. Holcomb MC USN, President
Acting Assistant Dental Surgeon Emory A. Bryant
Acting Assistant Dental Surgeon William N. Cogan
William F. Murdy, Hospital Steward, Clerk

William F. Murdy was graduated later from dental school and entered the Dental Corps in 1918. The following candidates who were successful before the first examining board were appointed in January 1913: Dr. Harry E. Harvey, Dr. James L. Brown, Dr. Eugene H. Tennent, and Dr. Joseph A. Mahoney. In April of 1913, the first officers were appointed to the Naval Dental Reserve Corps as follows: Dr. Williams Donnally, Washington, D. C., Dr. Vines Edmunds Turner, Raleigh, N. C., and Dr. George C. Kusel, Swarthmore, Penna. The foregoing appointees also constituted the first board for the selection of officers of the Navy Dental Reserve Corps.

On 5 March 1913, Acting Assistant Dental Surgeon H. E. Harvey reported to the USS SOLACE as the first dental officer ordered to a ship. On 27 April 1913, Acting Assistant Dental Surgeon James L. Brown was ordered to the U. S. Naval Station, Guam, as the first dental officer to serve at an overseas base. On 4 August 1913, Acting Assistant Dental Surgeon Lucian C. Williams, the first dental officer ordered to Marine Corps duty reported to Parris Island, S. C. Thus, were the beginnings of recognized dental care in the U. S. Navy.

It should be noted that dental officers appointed under the Act of 1912 were not commissioned, although the Act made provision for commissioning "at the end of 3 years." The early appointees held the relative rank of Lieutenant (junior grade) and wore the insignia of such rank. The Reorganization Act of 29 August 1916 granted dental surgeons the rank, pay, and allowances of Lieutenants (junior grade). It provided further for advancement to the ranks of Lieutenant and Lieutenant Commander.

A young and inexperienced organization, the Dental Corps faced the spectre of war in less than 5 years after its establishment. Records indicate that 35 officers were on active duty 6 April 1917, the date marking the entrance of the United States into World War I; a peak of 500 officers was reached before the war ended. In spite of its youth, the Dental Corps, nevertheless, had its heroes in World War I. Two of its members were decorated with the Nation's highest award, the Medal of Honor: Lieutenant (junior grade) Weeden E. Osborne DC USN, the first Naval officer to meet death in the land fighting overseas, ". . . in helping to carry the wounded to a place of safety . . ." and Lieutenant (junior grade) Alexander G. Lyle DC USN ". . . for extraordinary heroism and devotion to duty . . . ."

Following World War II, the Dental Corps entered a period of consolidation. Although dental officers had served previously in the Bureau of Medicine and Surgery, it was in 1922 that a Dental Division was established to "care for the

technical needs of the Corps." In 1923, a Dental School was created as a Division of the U.S. Naval Medical School. The latter event marked the embarkation upon a course that has greatly influenced the professional excellence of the Corps through the years. Notwithstanding the fact that dental officers were granted the pay and allowances of the ranks of Commander and Captain in 1918, it was not until 1926 that the ranks were authorized. Although 14 officers were selected for the rank of Commander the same year, it was not until 1937 that dental officers were promoted to the rank of Captain. In 1942, the rank of Rear Admiral was authorized, Captain Alexander G. Lyle DC USN being the first dental officer to be so honored.

The economic crisis that faced the United States in the Thirties was reflected in the U.S. Naval Dental Corps. In 1932, the Naval Dental School was closed when budgetary limitations caused retrenchments. Further, six officers who held temporary appointments were assigned temporary duty with the U.S. Army in 1933 for service with the Civilian Conservation Corps. In 1936, the U.S. Naval Dental School was reopened, this time as a part of the Naval Medical Center, Washington, D.C. Significantly, Commander John V. McAlpin DC USN was ordered as Dental Officer in Command, the first dental officer to be so titled.

In the early 1940's, for the second time since the establishment of the Dental Corps, war clouds loomed on the horizon. The Corps expanded to the extent that 759 officers were on active duty at 347 dental facilities on 7 December 1941 —the morning of the attack on Pearl Harbor. The peak of World War II saw 7026 dental officers on duty at 1545 installations, the largest of which was Great Lakes, Ill., with 459 officers. Of significance during World War II, the U.S. Naval Dental School was commissioned as a part of the National Naval Medical Center in 1942; the first woman dentist in the Armed Forces, LT Sara G. Krout DC W-V (S) USNR, reported to Great Lakes in 1944; and an effort gained momentum for increased self administration for the Dental Corps. The latter was climaxed in December 1945 with the approval of the bill, Public Law 284, "To provide more efficient dental care for the personnel of the United States Navy."

But there was another side to the Dental Corps in World War II. At all operations, dental officers and dental technicians carried out regular duties, assisted in the sick bays and operating rooms, administered supportive therapy, gave anesthetics, and aided in identifying the dead. In that major conflict it may be said that few engagements took place without the active participation of the dental officer serving with his unit. Proportionately, each contributed his share in all the heroic efforts of each campaign. The following list of awards is some measure of their accomplishments:

| | |
|---|---|
| Silver Star Medal | 12 |
| Legion of Merit | 3 |
| Navy and Marine Corps Medal | 3 |
| Bronze Star Medal | 27 |
| Commendation Ribbon | 48 |

The following officers made the supreme sacrifice for their country in that conflict:

KILLED IN ACTION

| | | | |
|---|---|---|---|
| LCDR Hugh R. Alexander, DC, USN | 7 Dec 1941 | USS OKLAHOMA | Pearl Harbor |
| LT Edward A. Baumbach, DC, USNR | 13 Nov 1942 | USS JUNEAU | Guadalcanal |
| LT Thomas P. Capps, DC, USNR | 24 Nov 1943 | USS LISCOME BAY | Tarawa |
| LT James S. Cate, DC, USNR | 25 Jul 1944 | Fourth MARDIV | Tinian |
| LCDR Thomas E. Crowley, DC, USN | 7 Dec 1941 | USS ARIZONA | Pearl Harbor |
| LT Stanley E. Ekstrom, DC, USNR | 24 Oct 1944 | USS BIRMINGHAM | P.I. |
| LT Gilbert F. Gorsuch, DC, USN | 12 Nov 1942 | USS ERIE | Atlantic |
| LCDR Earl O. Henry, DC, USNR | 30 Jul 1945 | USS INDIANAPOLIS | P.I. |
| LT Charles W. Holly, Jr., DC, USN | 1 Mar 1942 | USS LANGLEY | Indian Ocean |
| LCDR Farrell W. Keith, DC, USNR | 1 Mar 1942 | USS HOUSTON | Java Sea |
| LT(JG) Stephen M. Lehman, DC, USNR | 4 Jul 1944 | Fourth MARDIV | Saipan |
| LT(JG) Thomas R. McIntyre, DC, USNR | 30 Oct 1944 | USS FRANKLIN | Okinawa |
| LT Edward J. O'Reilly, DC, USN | 24 Aug 1942 | USS ASTORIA | Solomons |
| LT(JG) Carol W. Peterman,Jr., DC,USNR | 8 Jul 1944 | USS LST-384 | France |
| LT Robert W. Seegar, DC, USNR | 1 May 1945 | USS TERROR | Okinawa |
| LCDR Laurice A. Tatum, DC, USNR | 15 Sep 1942 | USS WASP | Guadalcanal |
| CDR Wadsworth C. Trojakowski,DC,USN | 8 May 1942 | USS LEXINGTON | Coral Sea |
| LT Miller C. Wonn, DC, USNR | 21 Feb 1945 | USS BISMARCK SEA | Iwo Jima |

DIED AS PRISONERS OF WAR

| | | |
|---|---|---|
| LCDR James A. Connell, DC, USN | 6 May 1942 | Navy Yard, Cavite, P.I. |
| LT(JG) Robert G. Herthneck, DC, USN | 6 May 1942 | Navy Yard, Cavite, P.I. |
| LT Henry C. Knight, DC, USN | 6 May 1942 | 4th Marine Regiment, P.I. |
| LT Alfred F. White, DC, USN | 6 May 1942 | USS CANOPUS, P.I. |

Following demobilization, the Dental Corps faced its problems—the implementation of Public Law 284, officer retainment and career attractiveness, a broadening educational program, opportunities for dental research, assignment of dentists trained in the Navy V-12 program to the Army and Air Force, and others. In 1946, the U.S. Naval Dental Clinic, Brooklyn, N.Y., was established as the first of eleven such dental installations under the command of a dental officer and under the management control of the Bureau of Medicine and Surgery. The outbreak of the Korean Incident in June of 1950 found the Dental Corps with 1003 officers on duty and the need for another "buildup." The latter was given impetus by passage of the "Doctors Draft Law" which established priorities for service based on previous military service and training. During the peak, over 1900 dental officers assisted by 4700 dental technicians carried on operations at 480 facilities. Front line dentistry with the Marines in Korea was performed either in trucks converted to mobile dental units or in quonset huts.

Ever alert for progressive change, a program was originated in April 1955 that eventually would convert most dental operating units in the Navy to higher

speeds. The initial conversions were to belt-driven handpieces and later to turbines. The Dental Corps is proud of its part in the "high speed revolution," inasmuch as the air turbine and ultrasonic vibration instruments developed at the U. S. Naval Dental School played important roles in the radical changes in dental instrumentation during this period. Pioneer models of both instruments are on display at the Smithsonian Institution, United States National Museum, Washington, D. C.

As the U. S. Navy entered the nuclear and space age, the Dental Corps was challenged with new problems. The complexities of the new Navy made it imperative that the health of its men be brought to higher levels of perfection to eliminate ". . . every possible cause for impairment of the sense of coordination." Accordingly, new Navy dental research programs were directed toward closed environment and cold weather studies. The former were to better prepare Navy men for trips into outer space, and trips of prolonged periods beneath the seas in nuclear powered submarines. The cold weather studies were in support of the various Navy programs in the Polar regions. A sequel to the latter was the founding of the Antarctic Dental Society by four members of the U. S. Naval Dental Corps in December 1956. In the same year, the Dependents Medical Care (Medicare) Act became effective. It was of major import in that it made 130,000 dependents at overseas bases and remote areas eligible for routine dental care without authority for compensatory increases in dental personnel. The Dental Corps, however, accepted it in stride.

During the Fifties, significant developments in broadening the Dental Corps' education program included: production of a casualty care training manikin, "Mr. Disaster"; publication of a Color Atlas of Oral Pathology; and creation of an extension training program covering dental clinic administration, in addition to a series of professional subjects. Another major highlight in the history of the U. S. Naval Dental Corps was marked with the commissioning of the nuclear powered USS LONG BEACH in September 1961, and in November of the same year, the USS ENTERPRISE. In this manner, dental treatment in the U. S. Navy under nuclear power was initiated as a routine procedure.

Thus, after 50 years of steady progress, the U. S. Naval Dental Corps as an integral component of the Medical Department of the U. S. Navy reflects with due humility upon its previous accomplishments, and passes its heritage as a challenge to the future to maintain its worldwide leadership in the profession of dentistry.

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# MEDICAL NEWS LETTER

Vol. 40 Friday, 17 August 1962 No. 4



## Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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## Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.

(Table of Contents appears on page 40)

## Clinical Comparison of the Newer Anti-Inflammatory Corticosteroids*

Edward W. Boland, Los Angeles, California, U. S. A. Ann Rheum Dis 21:176, June, 1962.

The discovery by Hench, Kendall, Slocumb, and Polley (1950) that cortisone has the capacity to reverse the inflammatory reactions of rheumatoid arthritis stimulated great research activity in many disciplines of medicine. Biochemists, physiologists, and physicians, gifted with imagination and skilled in basic research, have contributed a vast body of knowledge about the mechanisms of adrenocortical secretion. The rates, cycles, and pathways of their biosynthesis have been explored; and their disposition and metabolic fates are now known. Much valuable information has also been acquired about the influence of adrenocortical steroids on carbohydrate, protein, and electrolyte metabolism, their effects on the processes of inflammation and immune reactions, their influence on the response of mesenchymal tissues, and their interrelation with the function of other endocrine glands. Simultaneously, resourceful physicians of many lands have been making practical application of corticosteroid compounds as treatment agents in a variety of disease states, including several rheumatic disorders, and have been critically appraising their merits, deficiencies, and hazards.

Investigators have been especially active in the chemical development, animal testing, and clinical assessment of chemically modified derivatives of cortisone and hydrocortisone. Research has been channelled in this direction with the aim of determining how alterations in formulae influence biological function, and, if possible, of devising compounds with greater therapeutic efficiency than the natural hormones. Since cortisone and hydrocortisone have serious limitations as treatment agents for rheumatoid arthritis and other chronic diseases responsive to steroids, the need for drugs with higher therapeutic indices has long been evident. Among the deficiencies inherent in the natural hormones are their suppressive rather than curative effect, the ephemeral nature of their benefits, their failure to halt the natural progression of rheumatoid arthritis even while adequate degrees of improvement and functional rehabilitation are being maintained, and their inhibiting effect on endogenous adrenocortical function.

Moreover, their usefulness, even as suppressive agents, is severely limited by their multiple physiological properties. In addition to their anti-inflammatory effect, they have many other actions, some of which produce unwanted signs of hormonal excess. The intrusion of these often prohibits the administration of doses of sufficient strength to maintain satisfactory improvement. The common undesirable reactions are now well known. They include

* Address delivered at the Royal Society of Medicine, London, on September 12, 1961. From the Department of Medicine of the University of Southern California School of Medicine and of St. Vincent's Hospital, Los Angeles, California, U. S. A.

heightened appetite coupled with excessive weight gain and abnormal deposits of adipose tissue; disturbances of electrolyte metabolism—particularly sodium and water retention and potassium loss, increased capillary fragility, cutaneous ecchymoses, thinning of the skin, striae, acne, and hypertrichiasis in women, negative calcium balance, and osteoporosis; retardation of fibrosis and delayed healing; elevation of blood pressure; nervous irritability; masking of infections; and other effects. And, in the course of treatment, unwanted physiological actions may promote such complications as peptic ulcer, pathological fractures, phlebitis, thrombo-embolic phenomena, emotional psychotic disturbances, necrotizing vasculitis, and peripheral neuropathy—or they may aggravate certain disease states, such as arterial hypertension, peptic ulcer, diabetes, osteoporosis, and tuberculosis, that may co-exist with rheumatoid arthritis.

Were it possible to modify the chemical structures of the basic steroids in such a way as to eliminate or attenuate those biological functions that promote objectionable "side-effects" and complications, while retaining their potent anti-inflammatory action—that is to split off the desired from the undesired properties—then suppressive drugs with greater therapeutic efficiency could be created.

## Development of Chemically-Modified Corticosteroid Compounds

That seemingly minor variations in the molecular composition of adrenocortical steroids might be reflected by quantitative differences in their biological properties was suggested by studies which compared the effects of cortisone and hydrocortisone in laboratory animals. In 1945, four years before the anti-inflammatory effect of cortisone was discovered, hydrocortisone, which differs from cortisone in only one structural detail—namely, the presence of a hydroxyl radical rather than a ketone group at the eleventh carbon position of the phenanthrene ring—was found to have greater physiological activity. Results of muscle-work tests, liver glycogen assays, and observations of the regressive changes produced in the thymus and adrenal glands indicated that hydrocortisone has twice the potency of cortisone (Ingle and Kuizenga, 1945; Pabst, Sheppard, and Kuizenga, 1947). Moreover, twice as much cortisone as hydrocortisone was required to promote equivalent eosinopenic responses (Thorn, 1950). Subsequently hydrocortisone was shown by us (Boland, 1952; Boland and Headley, 1952), and by Hench and Ward (1954) to have greater antirheumatic activity than cortisone. Studies that compared the milligram doses required for the maintenance of equivalent control of rheumatoid manifestations revealed that hydrocortisone was about 30% more potent. As long as 10 years ago, clinical investigators reported that, with equally effective doses, hydrocortisone is less likely than cortisone to produce mental excitation and oedema. This observation suggested to researchers that subtle changes in chemical composition might selectively influence biological properties other than the anti-inflammatory.

The first indisputable evidence that the functions of the natural corticoids could be altered selectively was supplied by Fried and Sabo (1953, 1954). These

investigators observed that the addition of halogen atoms at the ninth carbon position of hydrocortisone caused enhancement of several of its biological properties. Most significant was the fact that the potentiation did not apply with equal intensity to all metabolic functions and that the biological characters of the artificial compounds differed in accordance with which halogen—i. e. chlorine, fluorine, iodine, or bromine—was substituted. For example, 9-alpha fluorohydrocortisone, or fludrocortisone as it was later named, proved to be 10 to 15 times more powerful than the parent hormone in promoting glycogen deposition and suppressing anti-inflammatory responses in the rat; and it was 50 times more potent in retaining salt (Borman and Singer, 1954; Borman, Singer, and Numerof, 1954).

Among rheumatoid patients, the antirheumatic strength of fludrocortisone was found to be 10 times greater than that of hydrocortisone; and it was also 10 times more potent in eosinopenic, ACTH suppressing, and nitrogen wasting effects (Boland and Headley, 1954). Our own clinical experiences with the compound in 1954 led to considerable early enthusiasm, but this was soon dampened when it became obvious that the sodium-retaining and potassium-losing properties of the compound were enhanced to a much greater degree than its anti-inflammatory activity (Boland, 1955). After a few days of administration, pronounced oedema developed in most of the patients; and this precluded its practical application systemically as an anti-inflammatory drug. Nonetheless, observations with 9-alpha fluorohydrocortisone led to the inescapable conclusion that the mineralocorticoid, glucocorticoid, nitrogen anti-anabolic, and antiphlogistic activities of steroids could be altered profoundly and perhaps selectively by modifying their formulae.

Since 1953, a multitude of synthetic compounds have been devised by chemists, many of which are yet untested, even in animals. Of those that have received trial, many have demonstrated differences in anti-inflammatory potency and some have exhibited amplification or attenuation of one or another biological property.

The author's experience with 8 antirheumatic corticosteroid compounds has shown that none of them approximates the ideal of a suppressive agent for rheumatoid arthritis and other steroid-responsive conditions. Some of the analogues exhibit qualitative differences in one or another physiological action, but the major deterrent features of corticosteroids are shared by each of them. Prednisone, prednisolone, methylprednisolone, fluprednisolone, and paramethasone seem to have similar therapeutic indices; and there appears to be little to choose between them for the ordinary patient who requires steroid therapy. Conversely, because they produce unique reactions of their own and because they have greater proclivity to certain troublesome side effects, the therapeutic indices of dexamethasone, betamethasone, and triamcinolone are lower than that of prednisolone; they are less desirable for routine use and are best employed for selected cases as "special purpose" steroids.

NOTE: This study was supported, in part, by a grant from the Ahmanson Foundation.

## Socioeconomic Development and Childhood Mortality in the Americas

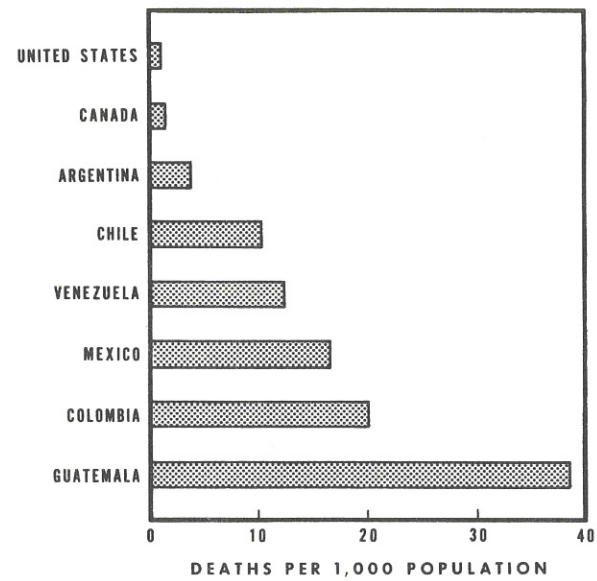
From: "Facts on Health Problems" — Pan American Health Organization, Pan American Sanitary Bureau—Regional Office of the World Health Organization, July 1961.

The death rates of children 1-4 years of age and information on per capita income, consumption of animal protein, literacy, and water supplies are shown in the accompanying charts for the United States, Canada, and six Latin American countries (selected because of availability of relatively reliable data).

The countries are shown in the same order in each of the charts. With an increase in death rates, in general the percentage literate, percentage with water supply, per capita income, and per capita consumption of animal protein decreases.

Although there are obvious difficulties in relating measures of socioeconomic development to mortality, these data strongly suggest interrelationship.

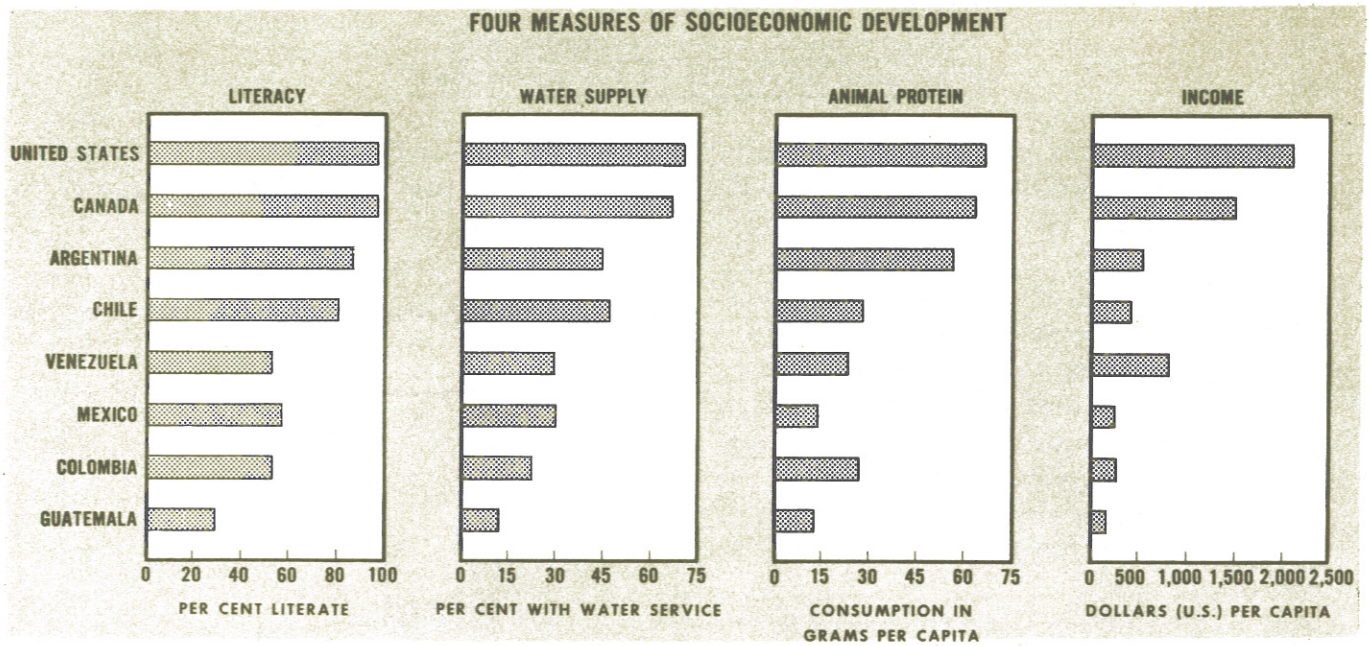
**DEATHS PER 1,000 POPULATION OF CHILDREN 1-4 YEARS OF AGE, 1956**




Modern medicine has increasingly effective techniques for preventing disease in the individual and the community and for treating disease. However, it has been found that the full potential of modern medicine for reducing suffering, for prolonging productive life, and for improving the quality of manpower cannot be fully realized in the absence of favorable social and economic environment.

One of the most striking illustrations of the interdependence of health and economic climate is found in the recent experience in Chile. Beginning in 1953, hospital, clinic and health services were combined and extended. This was accomplished through a unified National Health Service in charge of health protection by means of public health measures, social assistance, and medical care. The percentage of births occurring in hospitals (maternidades) increased from 37 in 1950 to 56 in 1958; the visits of children to clinics increased from slightly less than one million in 1950 to 2,400,000 in 1958; and rates of hospitalization showed large increases.

During this period there was tremendous inflation, with the cost of living increasing more than salaries. Unemployment increased and construction of houses decreased. In the period 1951-1958 the infant death rate and the death rate for children from 1 to 4 years stayed relatively constant; in 1958 the




rates were 122.7 per 1,000 live births (under one year of age) and 11.8 per 1,000 population (from 1 to 4 years). Thus the increase in quantity of medical care did not, in itself, appear to be sufficient to reduce mortality. This observation illustrates the fact that health services alone were not sufficient but that concomitant improvement in socioeconomic conditions was necessary.

In contrast it has been found in other areas that an increase in quantity and quality of medical and health services when accompanied by an essentially unchanged, or a non-inflationary increase in the economic level results in a gradual, or at times dramatic, drop in death rates.

The reduction of death rates in many countries depends on an integrated approach to improve socioeconomic as well as health conditions. Programs for social progress have been shown to have many health benefits. For example, the provision of water supplies has been found fundamental for industrialization and also for prevention of transmission of the gastro-intestinal diseases, which are chiefly responsible for the tremendous loss of life of infants and young children.

* * * * * *

## High Living

Editorial: The Lancet 7235:898, April 28, 1962.

The ascent of Mount Everest in 1953 brought home the value—both operational and medical—of oxygen for those at very high altitudes. The subsequent successes with other peaks spring largely from this lesson. Much further information about acclimatization and oxygen needs at high altitudes was gained by Sir Edmund Hillary's Himalayan Scientific and Mountaineering Expedition of 1960 - 1961 which was the first party to winter high in the Himalayas—eight

and one-half months were spent at over 16,000 feet. A prefabricated hut was erected at 19,000 feet and was occupied continuously from October 1960 to April 1961 by a group of scientists led by Dr. L. G. C. E. Pugh of the Medical Research Council's Division of Human Physiology who was a member of the 1953 expedition.

The work carried out was concerned with meteorology, glaciology, and physiology. The physiologic program consisted mainly in a detailed investigation of the oxygen transport system with studies of blood and respiratory gases, lung diffusion and cardiac output, and oxygen intake and ventilation during bicycle ergometer exercise. Blood volume and respiratory regulation were also investigated.

In April, a party of fresh climbers joined the expedition and the main body moved over to Mount Makalu (27,900 feet)—a journey of 3 days across several 20,000-foot passes. An attempt to climb the mountain without oxygen was defeated by an unfortunate series of illnesses affecting the leader, the deputy leader, and a member of the assault party who collapsed while climbing at 27,000 feet. Nevertheless, the physiologic program on Mount Makalu was successfully completed. The bicycle ergometer was taken up to 24,500 feet and was used there to measure oxygen intake and ventilation at extreme altitude. Samples of alveolar air were taken at altitudes up to 26,000 feet.

This expedition was described at a symposium held in London by the Royal Geographical Society. The medical aspects were covered by Dr. Pugh, Mr. M. P. Ward, and Dr. J. S. Milledge in clear-cut findings. First, with regard to acclimatization, man cannot live indefinitely as high as 19,000 feet. Although the wintering party remained apparently well and active, and card-sorting and other psychologic tests revealed no significant impairment, they continued to lose weight at the rate of 1 to 3 pounds a week. On Mount Makalu, climbers who had spent the winter at 19,000 feet, had little, if any, advantage over newcomers who had spent 4 to 6 weeks at an intermediate altitude. Beyond about 17,500 feet, climbers are subject to high-altitude deterioration; accelerating factors include starvation, dehydration, and restricted exercise (members of the winter party had enough food, fluid, and exercise, but were still affected). If protracted acclimatization is to be undertaken for "non-oxygen" attempts on the great Himalayan peaks, it should be at 12,000 to 14,000 feet where appetite and climbing performance are little impaired. The 4 main complications of living at very high altitudes are pneumonia, pulmonary edema, (this may develop at altitudes as relatively low as 12,000 to 15,000 feet), thrombosis, and frostbite. In the treatment of these complications, oxygen may be life-saving. Thus, no Himalayan expedition should take the field without oxygen equipment for medical use. Moreover, expeditions intending to climb beyond 23,000 feet should take, in addition, oxygen for rescuers. On Mount Makalu, one member of the party collapsed with pulmonary thrombosis at 27,000 feet; for various reasons, sufficient oxygen was not available at that height to mount a rescue operation as had been planned and, consequently, evacuation of the patient to base camp took 5 days. Oxygen is also needed operationally above a certain altitude: pressed by Sir John Hunt, Mr. Ward

(another veteran of the 1953 ascent) tentatively set this level at 25,000 feet—a view with which Sir John "as a layman" concurred.

This expedition—like its predecessors—showed vividly that oxygen and associated equipment must be taken to the high camps and not left behind at base camp. But transportation of anything to high camps is subject to Parkinson's law: the greater the weight, the greater the number of porters; the greater the number of porters, the greater the weight of supplies; the greater the weight of supplies, the greater the number of porters.... Accordingly, thoughts are now turning to closed-circuit apparatus which gives twice the boost of the present open-circuit apparatus. Mr. Charles Evans (a third veteran from 1953) who presided over the symposium remarked that the open-circuit apparatus was reliable and almost foolproof, and anyone thinking of changing to the closed-circuit should make sure that his faith in it is well founded. However it is to be delivered, those climbing beyond 12,000 feet might prudently take some oxygen. Moreover, in any Himalayan expedition oxygen is definitely needed for medical treatment. Beyond 23,000 to 24,000 feet, it is also needed for climbing and for rescuing. These are "musts" which no threatened manifestation of Parkinson's law should be allowed to thwart.

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## Post-Kala-Azar Dermal Leishmaniasis*

A case Report from Taiwan (Formosa). Capt Francis M. Morgan, MC, USN, Cdr Raymond H. Watten, MC, USN, and Cdr Robert E. Kuntz, MSC, USN. Journal of the Formosan Medical Assn. 61:282-291, March 28, 1962.

In 1909 Thomson and Balfour[1] reported nonulcerating oriental sore in 2 Egyptian soldiers and designated these as "Leishman nodules." Later, Brahmachari[2] described 4 patients in Calcutta having a peculiar form of cutaneous eruption that resembled tuberculoid leprosy which had appeared six months to two years after completion of treatment for kala-azar. He used the name "dermal leishmanoid" to describe this new entity. Five years later, Acton and Napier[3], also working in Calcutta, reported 44 patients with dermal manifestations of kala-azar. Twenty-four of these 44 had a previous history of visceral leishmaniasis. Acton and Napier therefore named this disease "post-kala-azar leishmaniasis" and suggested that in the 20 patients with no past history of the visceral form of the disease, transient leishmaniasis with spontaneous cure may have antedated the onset of the dermal manifestations.

Kala-azar is endemic in several areas of Continental China. In a recent publication, Wu[4] stated that dermal leishmaniasis was first reported from China in 1936 and that 25 cases had been discovered during recent years. Only six of these patients had a previous history of kala-azar which had been treated six months to three years previously. He further commented that most patients showed both visceral infection and skin manifestations at the same time.

* U. S. Naval Medical Research Unit No. 2 (NAMRU No. 2), Taipei, Taiwan

Cheng[5] encountered kala-azar in soldiers and their dependents who had come to Taiwan from mainland China. However, there have been no reports of autochthonous infections in Taiwan. Phlebotomus the vector of Leishmania donovani is unknown for the island[6]. Since kala-azar and dermal leishmaniasis are unknown in this area, the condition in the patient on whom the present report is based was erronously diagnosed as leprosy. There is little doubt that the patient had contracted the disease on the mainland of China.

## Animal Inoculation

Animal inoculations were made at the same time other laboratory studies were in progress in an attempt to establish experimental infections which would permit more detailed investigations on the parasite. Tissues were obtained from the patient prior to treatment with Neostibosan. The inoculum was prepared by macerating tissues from the base of an excised nodule containing L-D bodies in normal saline.

The following animals were employed: Taiwan monkey (Macaca cyclopis), golden hamsters, white hamsters, guinea pigs, hooded rats, albino mice, cats, and dogs. Three routes of inoculation were used to introduce the suspension of tissues and fluid into each host species; two animals were injected intraperitoneally, two subcutaneously, and in two, the inoculum was rubbed into the scarified skin of the abdomen and back. One host of each pair was sacrificed at the end of three months, the other at six months. At the time of autopsy a gross examination was made for evidence of lesions. Tissues were obtained from different levels of the digestive tract, from the heart, lungs, sternum, intercostal tissues, liver, spleen, and diaphragm. Skeletal muscle samples were excised and all tissues were fixed in formalin for sectioning. Smears were prepared from the peripheral blood and imprints were made from the spleen, liver, heart, and sternal bone marrow. Suitable areas of skin were obtained from hosts in which the suspension had been introduced subcutaneously or dermally. The sections were stained with hematoxylin and eosin, as well as with Giemsa. Leishmania was not detected in any of the materials examined.

A second attempt at animal passage employing the same techniques was made in August 1959, after the patient had been treated with Neostibosan but prior to therapy with Hydroxystilbamidine. Tissue imprints prior to preparation of inoculum for injection showed that L-D bodies were still present in great numbers. This attempt at experimental infections was also unsuccessful.

## Discussion

Post-kala-azar dermal leishmaniasis, while not common in China, is well known in areas endemic for kala-azar in India[7] and has been reported from the Sudan[1] and East Africa[8]. The name, post-kala-azar dermal leishmaniasis, while awkward, is descriptive and serves to differentiate this specific clinical entity caused by L. donovani from cutaneous leishmaniasis (tropical sore, L. tropica) and mucocutaneous leishmaniasis (American leishmaniasis, L. brasiliensis). Morphologically, the protozoa are reportedly difficult to tell apart and

serological methods of identification, as well as animal inoculation studies, have led to inconsistent results[8, 9].

Despite the authors' failure to isolate an organism from their patient or to otherwise identify it, they believe his illness was probably the result of an L. donovani infection, for the following reasons: (1) the histopathology of the nodules subjected to biopsy was identical with the description published by Sen Gupta and Bhattacharjee[10]; (2) there was evidence of visceral involvement which evidently is not seen in either the cutaneous or mucocutaneous forms of leishmaniasis; and (3) the patient came from an area in China known to be endemic for kala-azar. In addition, the case under discussion is similar in many respects to several cases reported from India in which the similarity between the nodular lesions of leishmaniasis and tuberculoid leprosy was discussed[11, 13].

The patient's past history of an acute febrile illness with questionable splenomegaly two years prior to the onset of dermal involvement is highly significant. Although this episode was diagnosed as malaria and responded to malaria-suppressant treatment, it is quite possible that it was actually mild kala-azar with spontaneous remission. Since Acton and Napier[3] reported that almost half of the patients they had diagnosed as having post-kala-azar dermal leishmaniasis did not have a past history of treated kala-azar, there has been adequate confirmation of this observation[14] and it is now generally accepted that a history of treated visceral leishmaniasis is not essential for the diagnosis of dermal manifestations. Sen Gupta[7], in reporting 1,000 cases of leishmaniasis with dermal involvement from India, stated that while 83% of his patients had a definite history of pre-existing kala-azar requiring treatment, 13% had only a history of fever and splenomegaly which subsided without specific therapy and 4% had no history of antecedent disease.

In regard to the therapy of kala-azar dermal leishmaniasis, there are several aspects of the case reported here which are worthy of mention. First, two adequate courses of a pentavalent antimony compound (Neostibosan) were given without benefit. Sen Gupta[7] reported marked improvement or cure in over 70% of his patients with the use of pentavalent antimony compounds but remarked that two to three times the usual dosage had to be given and even then the results were not wholly satisfactory. Secondly, marked improvement was noted following a single course of an aromatic diamidine (Hydroxystilbamidine), using the recommended dosage. Sen Gupta[7] stated unequivocally in his review of dermal leishmaniasis that "aromatic diamidines are without any effect on post-kala-azar dermal leishmaniasis as seen in India." Varma[13] reported a single case of dermal leishmaniasis from India indicating successful treatment with a diamidine (Pentamidine Isethionate). It must be emphasized that while Hydroxystilbamidine caused rapid and dramatic improvement in the authors' patient, two courses of treatment did not effect a cure and after a period of a few months, several nodules reappeared. The third point of interest in regard to therapy is the ultimate cure of the patient with intravenous amphotericin B. Furtado, et al[15] established the high leishmanicidal action of amphotericin B in vitro on L. brasiliensis, and Sampaio and associates[16] reported on the effectiveness of the

drug in curing patients with American (mucocutaneous) leishmaniasis, who had been refractory to treatment with antimonial compounds. The writers have been unable to find any published reports on the use of amphotericin B in post-kala-azar dermal leishmaniasis. Further studies of this promising antibiotic in the highly endemic areas of India seem indicated because of the inconsistent results obtained from treatment with antimonial compounds.

Corticosteroid hormones were employed with some success in treating this reported patient and are recommended as an adjunct to specific therapy. Cortisone initially produced some softening of the nodular lesions on the face but a mild flare-up of activity in these lesions occurred when the drug was stopped. The use of prednisolone (20 mg) by mouth daily, during infusions of amphotericin B, lessened the uncomfortable side reactions from this drug. Sampaio[16] had similar results using prednisolone with amphotericin B for the treatment of American leishmaniasis. The use of steroids as a supplementary treatment in late leishmaniasis has been discussed by Dostrovsky[17] who concluded that only partial improvement was obtained with steroids alone but when used in conjunction with antimony preparations the results were promising. He further commented that the use of steroids did not produce any spread or generalization of the disease.

Lower mammals, especially the golden hamster, have been used successfully for detection and experimental work with other types of leishmaniasis. There has been limited reference, however, to the supportive use of animals in studying patients with post-kala-azar dermal leishmaniasis. The authors' failure to infect animals, although the inoculum contained numerous L-D bodies, may possibly have been due to low virulence of the parasite.

The occurrence of an infectious disease outside of its usual endemic area makes diagnosis understandably difficult because it is not suspected. This partially explains the long delay between the onset of symptoms and diagnosis in the reported patient. In addition, the striking similarity between the appearance of the patient and cases of tuberculoid leprosy, the two-year incubation period, and the failure to detect L-D bodies in earlier biopsies were factors in making the diagnosis difficult.

Summary

1. A patient with post-kala-azar dermal leishmaniasis which closely resembled the lesions of tuberculoid leprosy is presented in detail. The disease was undoubtedly contracted on mainland China. There was a history of fever and questionable splenomegaly which subsided spontaneously two years prior to the onset of the dermal lesions.

2. Two attempts at animal passage of the Leishmania organism from skin nodules containing L-D bodies were unsuccessful. L. donovani was suspected as the causative organism because of the histological appearance of the nodules, evidence of visceral involvement, and the patient's residence in an area known to be endemic for kala-azar.

3. In regard to treatment, Neostibosan, Atabrine, and oral amphotericin B had no therapeutic effect. Steroid hormones produced slight improvement when

used alone. Hydroxystilbamidine caused remarkable clearing but lesions reappeared after two full courses of treatment. Intravenous amphotericin B resulted in complete clearing of all lesions.

Acknowledgements: The authors are indebted to Lt. Col. S. M. Dozier, MC, and Captain H. H. Shamdin MC of the 406th Medical General Laboratory, Camp Zama, Japan, for cooperation in processing and examination of tissues from the patient and laboratory animals. Recognition is also due G. M. Malakatis, HM1, USN, for technical assistance.

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ERRATUM NOTICE:

LCdr Joseph L. Caldwell, Jr., MC, USNR has received American Board Certification by the American Board of Surgery, not the Board of Internal Medicine as stated in the Reserve Section of the Medical Newsletter, Vol. 40, No. 1, of 6 July 1962.

# MISCELLANY

## Vacations and High Altitude Sickness

Planning a trip to the mountains to get away from the heat for a week or so? So are several million other American families. If you're headed for some really high mountains—above 7000 feet—it would be wise to make the change gradually if you wish to avoid "high-altitude sickness." Try, if you can, to make the ascent over a span of days so that your body can adjust to the oxygen-poor "thin air" at higher elevations, cautions Today's Health, the magazine of the American Medical Association.

Symptoms of high-altitude sickness are drowsiness; headache; blueness of the nails, lips, nose, and ears; a feeling of warmth and flushing of the face soon after arrival; troubled sleep; dizziness; irritability; and shortness of breath.

There are some precautions that may help prevent distress if you have to make a fast trip from a low level to high elevations. Before the trip, get a good night's rest and avoid alcoholic beverages and heavy smoking. A good breakfast an hour or so before departure is all right, but no food should be taken during the rest of the trip. Reduce physical activity during the trip. Sit quietly as much as possible. After arrival in the high altitude area, go to bed for a few hours and eat very lightly. Indulge in only light physical activity during the first 24 hours. Walk, don't run, if you have to climb steps to a hotel or lodge.

Patients with certain heart and respiratory conditions may encounter more serious trouble by abrupt change to high altitudes. However, physicians have noted that most patients with cardiac or pulmonary disease who can move around and engage in moderate activity at sea level most often can tolerate altitudes of 7000 to 8000 feet without serious effects. If you have any doubts as to whether you or someone in your family may suffer from a trip to the high mountains, consult your physician in advance.

—Health and Safety Tips, American Medical Association

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Estimated Costs of Syphilitic Psychosis in U.S. - 1958. Maintenance of patients with syphilitic psychosis was $50,199,000; loss of income by males with syphilitic psychosis, $83,360,000. The direct costs of mental illness have been calculated to be $1.7 billion around 1956 in the United States.

—Facts on Health Problems, PAHO/WHO, July 1961

# A STUDY OF THE GERMAN OUTBREAK OF PHOCOMELIA

## The Thalidomide Syndrome *

Helen B. Taussig MD, Baltimore, Md. J. A. M. A. 180: 1106-1114, June 30, 1962.

In late January of this year, Dr. Taussig heard that a large number of infants had been born in West Germany with severe malformations of the extremities, and that a sleeping tablet was suspected as the cause. "I immediately went to West Germany to investigate the situation and traveled throughout West Germany with exception of West Berlin," writes Dr. Taussig. Her report continues:

"It was indeed true that a new clinical syndrome had appeared. The outstanding feature was phocomelia. Phocomelia means "seal extremities"; the word comes from two Greek words, phokos meaning "seal" and melos meaning "extremities." In phocomelia the bones between the hand and the shoulder are defective or absent and the hands or rudimentary fingers arise directly from the end of the affected bone as the flippers of a seal. The first two such cases were presented by Kosenow and Pfeiffer as an exhibit at the German Pediatric Meeting in Kassel in 1960. At this exhibit, Kosenow and Pfeiffer reported that no hereditary factor was found, nor was any blood incompatibility demonstrable, and no chromosomal abnormality was detected. Little attention was paid to the exhibit. Dr. Guido Fanconi, however, studied the cases and stated he had never seen the clinical syndrome. In retrospect, it is surprising that so little attention was paid to this exhibit because, during 1960, infants with this syndrome had been brought to almost every pediatric clinic in West Germany.

Phocomelia has long been known as a rare malformation but usually affects only one limb. Dr. Gruber of Gottingen, who is now 86 years old and has devoted his life to malformations in man and animal, told the author he had seen as many individuals with two heads as he had with phocomelia.

Suddenly, in 1961, the incidence of phocomelia increased rapidly. Almost every clinic in West Germany admitted three times as many such infants in 1961 as in 1960. By the time of the 1961 pediatric meeting in Dusseldorf, almost all pediatricians were aware of the outbreak of phocomelia.

The causative factor appeared to be an exogenous agent. Many retrospective studies were instituted. Almost simultaneously, Lenz in Hamburg and McBride in Australia suspected that the malformations were caused by taking thalidomide in early pregnancy.

Thalidomide is a synthetic drug developed by Grunenthal and marketed in Germany as Contergan, in England as Distaval, in Portugal as Softenon, as Kevadon in the United States (though not released by our Food and Drug

* From the Department of Pediatrics, the Johns Hopkins University School of Medicine, and the Harriet Lane Home of the Johns Hopkins Hospital.

Administration) and as Kevadon and Talimol in Canada. It was an excellent sleeping tablet and tranquilizer and was added to a number of other compounds which were used for the relief of grippe, migraine, and asthma, and also for expectorants.

The circumstantial evidence is overwhelming that this drug does cause severe malformations of the extremities. Grunenthal showed that the drug passed through the placenta of rabbits. Distillers, Ltd., in England, have reproduced the malformations in rabbits by feeding the drug to pregnant animals. Murphy has produced phocomelia in the rat by an enormous dose of thalidomide given intraperitoneally to a pregnant animal.

Certainly, new drugs which are of use to persons of all ages and which enter the blood stream should be screened for possible teratogenic action. Furthermore, young women must learn that nothing is foolproof and new drugs should not be taken unless absolutely necessary as the damage often occurs before the woman knows she is pregnant.

This drug shows how serious the side effects of drugs may be and it also opens up a new avenue to the study of the etiology of malformations."

(Dr. Taussig's trip was supported by the International Society for Cardiology Foundation, the Heart Association of Maryland, and the National Institutes of Health.)

NOTE: The original article in the J.A.M.A. is highly recommended priority reading. It contains an excellent expose of the drug Thalidomide as the etiology of these severe malformations. The article presents 15 photographs in 6 figures, revealing the severity of these deformities.

The reader is further referred to an article by W. L. Nyhan MD of the Department of Pediatrics, Johns Hopkins University School of Medicine, and the Harriet Lane Home of Johns Hopkins Hospital, on the "Toxicity of Drugs in the Neonatal Period" in the Journal of Pediatrics, Vol. 59, pp 1-20, July 1961. This article was condensed in the U.S. Navy Medical News Letter, Vol. 38, No. 5, 1 September 1961. —Editor

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## From the Note Book

## Accidents Lead in Physical Impairments

Assistant Surgeon General A. L. Chapman of the Public Health Service, DHEW, who is Chief of the Division of Accident Prevention of PHS, reported as follows on 3 August 1962:

"Accidents cause more physical impairments among Americans than any disease. Analyzing the latest figures from a U.S. National Health Survey, study of impairments, it is noted that accidental injuries caused about 75% of all amputations. Among males, accidents caused five times as many amputations

as all other causes combined, as well as over half of all impairments of limbs and torsos—about 7-1/2 million cases. Among other impairments included in the analysis were:

Visual impairments. Total, about 3-1/2 million; due to accidents, over 500,000. Among persons under 65: Total, almost 1,800,000; due to accidents, over 400,000. Accidents cause about three times as many visual impairments among males as among females.

Hearing impairments. Total, about 6 million; due to accidental injury, about 400,000. In the 25 to 44 age bracket, the percentage of hearing impairments due to accidents is almost twice as high as in the total population—13% against 7.3%, with males represented about three times as often as females.

Paralysis. Total, about 100,000; due to accidents, about 14,600; but the rate among people under 45 is 20% against 14.6% in the total population.

We have long known that accidents are our fourth leading cause of death, and that they are the first cause from age 1 through age 35. Analysis of this study reveals that they injure and impair—often with disabling severity—more people than any disease, and that their impact is heaviest in those age groups from which the Nation must draw the bulk of its productive and military strength. It is encouraging to note that State and local health agencies and professions allied with them are now committing their skills and resources to those of other agencies and organizations in the fight against accidents. I am convinced that the historic public health approach—research, epidemiologic investigation, demonstration, and application—will pay off in accident prevention as dramatically as it has in the conquest of the communicable diseases."

NOTE: The appalling toll of accidents in the United States is a national disgrace for which the medical profession must accept a certain percentage of responsibility. This percentage relates specifically to those physicians and allied scientists who have either ignored this nightmarish situation or have failed to provide remedial action in the form of dynamic leadership where the opportunities for prevention are great. Doctor Chapman's approach to these problems is highly commendable. In the U. S. Navy, there is an outstanding opportunity for all members of the Medical Department to practice a positive approach to accident-prevention—carrying the campaign to all hands and their families.

—Editor

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## Medical Section of Fleet Training Group, Guantanamo Bay, Cuba, Reactivated

Cdr S. P. Tipton MSC USN

The medical section of Fleet Training Group (FTG), Guantanamo Bay, Cuba (GTMO) was inactivated in 1956, and from that date to September 1961 ships of the U. S. Atlantic Fleet did not receive Medical Instruction during their underway training periods. Captain E. H. Joy MC USN, CRUDESLANT Force Medical

Officer, felt there was a need to reinstitute this phase of training in the Destroyer type ships. Mostly through his efforts a Medical Section was reactivated at FTG, GTMO in September 1961. The section presently consists of one Medical Service Corps Officer and two Chief Hospital Corpsmen.

All Type Commanders except Commander Mine Forces, Commander Submarine Forces, and the U. S. Coast Guard desired that the medical phase of shakedown or refresher training be extended to their vessels. Since reactivation to 1 July 1962, one hundred seventeen ships have received medical training assistance from the Group.

The mission of the FTG Medical Section is to assist in bringing the Medical Departments of the ships under training to the peak of operational readiness. The Group has no requirements for the Medical Departments to meet, but checks their organization, preparation for battle, and first aid training of the crew as required by the Type Commander, CINCLANTFLT, BuMed and BuShips directives, instructions, and manuals.

When a ship arrives for training, a thorough inspection is made of the Medical Departments Organization, Orders, Bills, procedures, training program for medical and non-medical personnel, assignment of medical personnel to emergency stations, safety precautions, operating instructions, and maintenance of medical equipment, operational records, and operational publications. The arrival inspection list contains 100 separate items to be checked and the average number of deficiencies noted is 17. Some ships arrive with relatively few deficiencies while others have excessive numbers into the 40's.

During the ship's training period, two medical instructional periods at sea are scheduled. The ship's Medical Department Representative is observed during his presentation of a first aid lecture. The subject matter is of his choice from the Syllabus of Lesson Plans for First Aid Instructors (NAVMED P5056). A copy of the personal lesson plan used by the instructor is made available to the FTG observer. If appropriate, helpful suggestions are talked over with the instructor. The nonmedical personnel of the ship are also evaluated on their knowledge of, and proper use of, first aid materials available in first aid boxes about the ship. This is accomplished through asking questions on first aid and requiring crew members to demonstrate their knowledge by treating imposed simulated casualties. Wound moulages are employed to aid the crew member in visualizing the wound to be treated. Questions on Nuclear, Biological, and Chemical Warfare agents, contamination, decontamination, and treatment are also asked. During medical instruction periods all Battle Dressing Stations are required to be completely activated to test all surgical and emergency lights, operability of surgical sterilizer and resuscitator; an inventory is made of medical supplies to check their sufficiency as to number and to assure that outdated and/or defective materials are not stocked.

The assigned stretcher bearers are also exercised and observed on their knowledge and use of the Neil-Robertson stretcher (also known as semi-rigid or wrap around stretchers). The handling of the casualty, with consideration of the type of injury imposed and the safety measures used in evacuating the patient, is closely observed.

The final medical evaluation comes on the day the ship receives its Operational Readiness Inspection by all departments. During the battle problem, simulated personnel casualties are again imposed by the use of wound moulages. The ship's nonmedical personnel are expected to treat the simulated injury as if it were real, using whatever medical material is available to their general quarters (battle) stations. The wounded person is expected to be evacuated to the appropriate battle dressing station (medical department personnel man these battle stations) as the situation of the battle problem permits. Sometimes the wounded receive first aid treatment by the men on their general quarters stations as it is impossible to evacuate the patient to a battle dressing station until a particular phase of the battle problem has ended.

In addition to the three and one half days spent with the Medical Department aboard ship, the FTG medical personnel are available each Saturday morning in the office to assist the ship's Medical Department Representatives in preparation of Medical Department Organization Manuals, Bills and/or training programs.

The ship's Medical Department Representatives are in nearly all instances very receptive to the FTG endeavor to help them. Some of the Hospital Corpsmen on Independent Duty (ships without medical officers) are not graduates of the "B" School, Advanced Hospital Corps School; others have had no refresher courses in 8 to 12 years. This tends to cause a delay in the training of the non-medical personnel, as it requires approximately the first two weeks of the training period for the Hospital Corpsman to prepare his department to carry out the training. But, by and large, when the ships have completed shakedown or refresher training, the Medical Departments are Battle Ready and a basic training program for the teaching of the crew in Self and First Aid measures has been developed and instituted so training can be continued.

The FTG GTMO Medical section has been reactivated to assist the Medical Departments of the Atlantic Fleet to become Operationally Ready. Excellent cooperation is being received from the ships' officers and crew in carrying out the refresher training for they realize their medical needs rest in the very capable hands of the Independent Duty Hospital Corpsman and their own knowledge of self and first aid.

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New Honor for ADM Hogan. Rear Admiral Bartholomew W. Hogan MC USN (Retired), Chief of the Bureau of Medicine and Surgery, and Surgeon General of the U. S. Navy from February 1955 to February 1961, received appointment on 15 July 1962 as Acting Medical Director of the American Psychiatric Association—with Headquarters in Washington, D. C.

Thus, in addition to his illustrious U. S. Naval career, ADM Hogan is continuing to make positive contributions to American medicine.

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## Naval Medical Research Reports

U.S. Naval Medical Research Laboratory, U.S. Naval Submarine Base, New London, Conn.

1. Discrimination in Auditory and Visual Patterns MR 005.14-1001-1.26 Report No. 373, January 1962.
2. Prolonged Exposure of Animals to Pressurized Normal and Synthetic Atmospheres MR 005.14-3100-3.02 Report No. 374, January 1962.

U.S. Naval School of Aviation Medicine, Aviation Medical Center, Pensacola, Florida.

1. LET Analysis of Tissue Ionization Dosages for Proton Radiations in Space MR 005.13-1002 Subtask 1 Report No. 21, February 1962.
2. Relationship of Arousal Measures to Subsequent Behavior I. Group Estimates of Individual Stress Susceptibility MR 005.13-3003 Subtask 14 Report No. 1, April 1962.
3. Relation of the Gordon Personal Inventory MR 005.13-3003 Subtask 1 Report No. 34, May 1962.
4. Comparison of Methods for Deriving Peer Nomination Scores MR 005.13-3003 Subtask 1 Report No. 35, May 1962.

Air Crew Equipment Laboratory, Naval Air Material Center, U.S. Naval Base, Philadelphia 12, Penna.

1. Tools for the Analysis of Incomplete or Unsatisfactory Empirical Data MR 005.12-2002.3 and MR 005.12-2002.4, May 1962.
2. Coordinated Field Application of Extratympanic Manometry MR 005.13-2002.4, May 1962.
3. Physiological Investigation Associated with the Evaluation of the Omni-Environment Full Pressure Suit MR 005.12-1006.1, June 1962.

U.S. Navy Medical Neuropsychiatric Research Unit, San Diego 52, Calif.

1. Attitude Changes in Small Groups under Prolonged Isolation Report No. 62-2 MR 005.12-2004 Subtask 1, September 1961.
2. Adjustment Criteria in Antarctica Report 62-1 MR 005.12-2004 Subtask 1, March 1962.
3. Clinician Agreement in Assessing for an Unknown Environment Report 62-4 MR 005.12-2004 Subtask 1, April 1962.
4. Stability and Correlates of Spontaneous Autonomic Activity Report 62-6 MR 005.12-2304, April 1962.
5. Spontaneous Autonomic Activity and Adaptation Report 62-7 MR 005.12-2004, April 1962.
6. Pre-Enlistment Variables Related to the Performance and Adjustment of Navy Recruits MR 005.12-2502 Subtask 1, April 1962.

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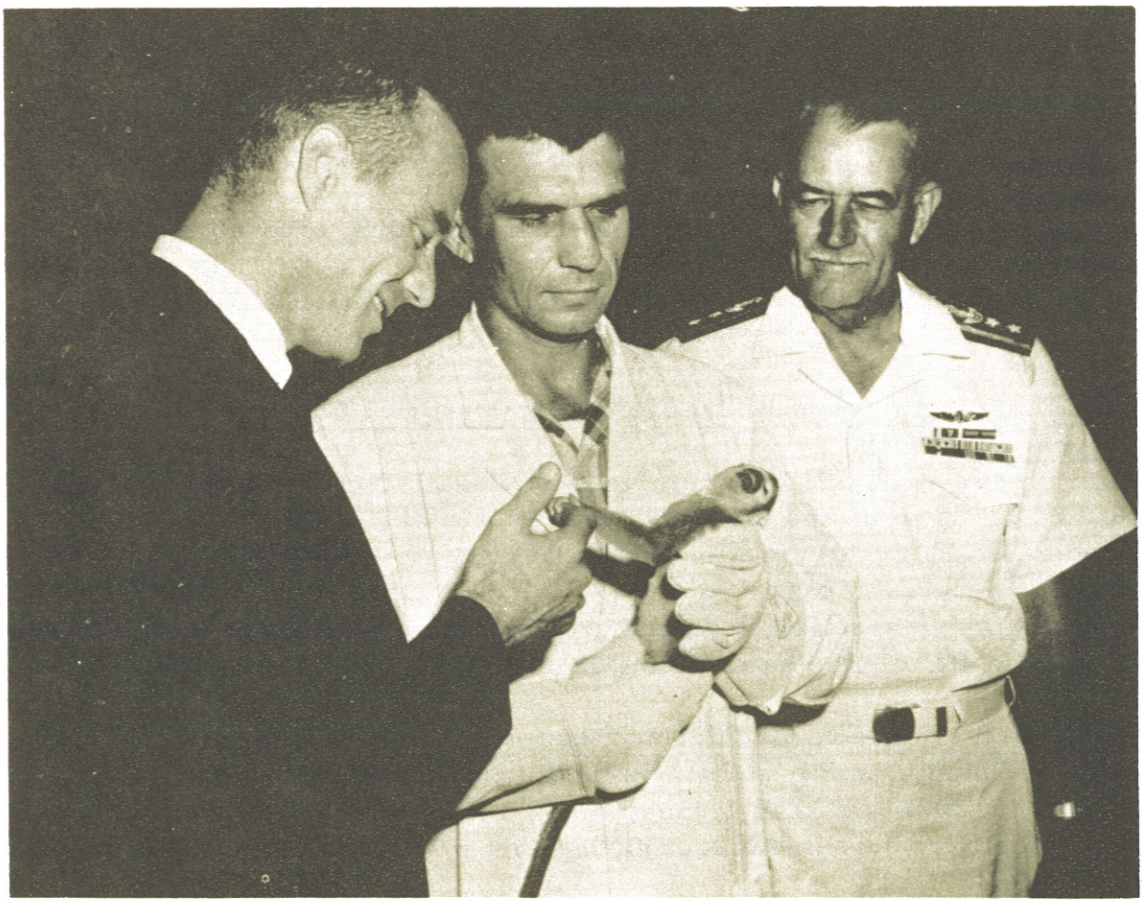
## AVIATION MEDICINE DIVISION

### Fellow Space Travelers



Astronaut LCdr Malcolm Scott Carpenter USN meets Monkey Baker during his visit to NAS Pensacola, Fla., on 12 June this year. Monkey Baker was the first space traveler for NASA, and Carpenter the most recent. Monkey Baker is held by her immediate supervisor, Charles Lowrey, and observed by RAdm James L. Holland MC USN, then Commanding Officer of the U. S. Naval Aviation Medical Center, Pensacola, Fla. —from PIO, Naval Air Basic Training Command, U. S. Naval Air Station, Pensacola, Fla.

(Official photograph, U. S. Navy, by L. D. Smith PH2)

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## Thousand Aviators Study

Another step was taken on 1 May, at the U. S. Naval School of Aviation Medicine, Pensacola, Florida, in the follow-up study of the physical condition of "The Thousand Aviators" who were first examined in Pensacola in 1940. At that time the average age of the men was 24.

Capt Ashton Graybiel, MC, USN, Director of Research, U. S. Naval School of Aviation Medicine, held a conference with representatives of the U. S. Department of Health, Education and Welfare and other personnel interested in the 22-year study. They discussed procedures for the next examinations of the remaining members of the original group.

In the summer of 1940, physiological and psychological tests were begun on 1,056 student aviators and flight instructors in Pensacola. At the time no thought was given to the possibility of a follow-up study, but after 10 years it was considered desirable to attempt it. Considerable difficulty was encountered in tracing the 1,056 aviators. All but seven were located. They were re-examined in 1952.

The project became known as "The Pensacola Study" and "The Thousand Aviator Study." Again in 1958 examinations were conducted and findings were recorded.

This year a medical examining team will travel extensively to contact and examine more than 750 of the "Thousand Aviators."

Examining teams in the past reported they found some of their subjects still in the naval service, and others were in every conceivable place from "Governors' Mansions" to obscurity.

The long-term study of the health of"The Thousand Aviators" is contributing significantly to medical science, according to Capt C. P. Phoebus, MC, USN, Commanding Officer of the U. S. Naval School of Aviation Medicine.

—FLY, NAVAIRTRACOM, Pensacola, Fla.

(Report of findings to follow)

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## Adm Newman Relieves Adm Holland

Rear Admiral J. L. Holland, Medical Corps, gave his farewell address to personnel of the U. S. Naval Aviation Medical Center and its component commands and passed the Center command to Rear Admiral Langdon C. Newman, Medical Corps, in ceremonies on 11 July 1962.

Admiral Newman is the second officer of his rank to command this medical complex, which encompasses the Center, U. S. Naval Hospital, and U. S. Naval School of Aviation Medicine.

Guests of honor included Vice Admiral Fitzhugh Lee, Chief of Naval Air Training and Rear Admiral M. H. Tuttle, Chief of Naval Air Basic Training. In addition to the military personnel of the three commands, many civilians, and military personnel of other commands witnessed the proceedings.

Following the change of command, Admiral and Mrs. Holland adjourned to the Mustin Beach Officers' Club where they hosted a reception for invited

guests and said "aloha" to their friends before leaving for Hawaii. Admiral Holland will be the Fleet Medical Officer on the Staff of the Commander-in-Chief, U. S. Pacific Fleet.

Admiral Newman graduated from the U. S. Naval School of Aviation Medicine in 1944 and received his wings as a Naval Flight Surgeon. In 1957, as a Captain, he returned to be the Commanding Officer of the School. He now reports here from an assignment as U. S. Navy Inspector General (Medical) in Washington, D. C. His inspection duties entailed travelling to nearly every medical facility of the Navy throughout the world.

He completed his education at Vanderbilt University and the Vanderbilt Medical School, has served at many naval hospitals, ships, and stations, with the Fleet Marine Force, and was Director of Aviation Medicine in the Bureau of Medicine and Surgery, Washington, D. C., from 1952 to 1957. In the latter assignment, he relieved Admiral Holland.

Admiral Newman was in Shanghai, China in 1937 at the outbreak of the Japanese-Chinese War and at Pearl Harbor on December 7, 1941 at the outbreak of World War II. He has served in the Navy for 31 years. He is a member of the American Medical Association; Aerospace Medical Association; a Fellow in the College of Preventive Medicine; and certified in Aviation Medicine. —PIO, NAVAVMEDCEN.

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## Dr. Donald E. Stullken Transfers

Dr. Donald E. Stullken, aviation physiologist on the staff of the Chief of Naval Air Training transferred to Houston, Texas, on June 30. In Houston he will become the Head of the Recovery Operations Branch, Manned Spacecraft Center of the National Aeronautics and Space Administration.

Dr. Stullken has been a civilian employee on the staff for eight years having cognizance of all matters pertaining to training in aviation physiology, personal safety equipment, survival, and escape and evasion and physical fitness in the Naval Air Training Command.

In 1958 he was a member of the team of scientists at the U. S. Naval School of Aviation Medicine that developed the biocapsule in which the monkey "Baker" was sent into space in the nose cone of a U. S. Army Jupiter rocket. He helped develop the life support systems, animal restraint, and training of the monkeys, and removed the "Baker" monkey from the biocapsule after her historic flight through space on May 28, 1959.

Again in 1960 Dr. Stullken collaborated with the School of Aviation Medicine in the study of the medical aspects of the Project Mercury Recovery Program. As a result of this study, he conceived and developed the Auxiliary Floatation Collar for the Project Mercury Spacecraft which has been adopted by NASA for use in recovery of the astronaut following orbital space flight.

—PIO, NAVAIRTRACOM, Naval Air Station, Pensacola, Fla., 4 June 1962.

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# RESERVE SECTION

## Field Training of 13th Infantry Battalion, USMC Reserve

VIEQUES, Puerto Rico, 10 July (delayed)--A new force of Marine and Navy medical personnel accompanied Washington's 13th Infantry Battalion of Leatherneck reservists here to safeguard the health of the 300 men who flew to the Caribbean for two weeks of summer field training. They are the men of Company A, Fourth Medical Battalion, whose Commanding Officer is Commander John W. Walsh of Bethesda, Maryland. Dr. Walsh, a specialist in Internal Medicine, works for the Veterans Administration in hospital administration.

The company, made up of men from Washington, D. C., Maryland and Virginia, was organized earlier this year as the First Field Medical Company, U. S. Marine Corps Reserve. However, when the decision was made to form a Fourth Marine Division from selected reserve units in the event of need for expansion, the organization became one of two companies in the new medical battalion. The only other is now operating with a 105 mm artillery battalion in Los Angeles. The Washington unit, which trains with the 13th Infantry at the Naval Weapons Plant, received its new designation on 1 July 1962. At full war strength, the company would have a Navy surgeon as Commanding Officer, plus 4 other surgeons, 2 anesthetists, 18 enlisted Marines and 58 Navy Hospital Corpsmen. Since the unit is new but actively recruiting, there are only two officers currently assigned: Commander Walsh and Marine Warrant Officer John C. Stiles, Jr., of Rockville, Md. The latter was a Gunnery Sergeant until his promotion the day before the reservists left for the West Indies. He commented that if war, or a threat of war, caused mobilization of the Fourth Marine Division, the medical battalion would be beefed up to five companies, plus a headquarters and service company. These companies would be assigned to regiments of the division and stand ready to carry out their mission.

The mission of the medical battalion has been described as follows: "To train Naval and Marine Corps Reservists in those collecting, life-saving surgery, hospitalization and evacuation skills required of collecting and clearing company personnel of the Medical Battalion, Marine Division, Fleet Marine Force." This means, in a combat situation, that wounded men from the battle front would be collected, treated and evacuated if their injuries were serious.... or treated in the forward area if less serious.

After the period of strenuous and rugged training on Vieques, the medical Company reported only nominal illness in the 13th Infantry Battalion, USMCR.

—From: Maj. J. A. O'Leary, Jr., I. S. O., 13th Inf. Battalion, USMCR

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